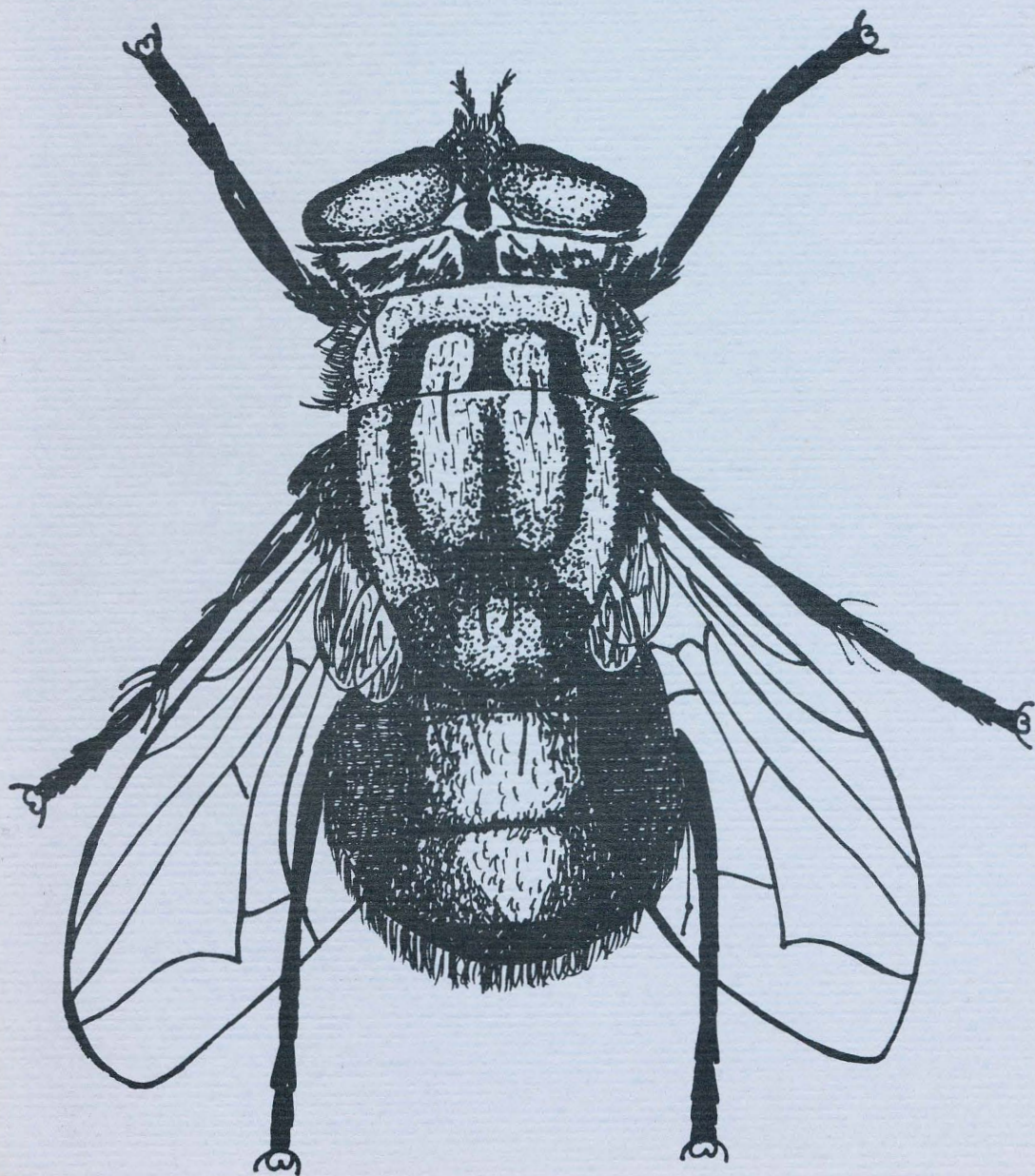
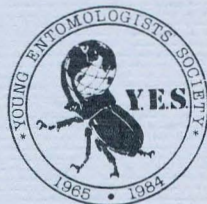


Vol. 2, No. 3

Summer 1985

Published by: YOUNG ENTOMOLOGISTS' SOCIETY

Y.E.S. QUARTERLY





COOPERATIVE
EXTENSION
SERVICE

YOUNG ENTOMOLOGIST'S SOCIETY

MICHIGAN STATE UNIVERSITY • U.S. DEPARTMENT OF AGRICULTURE & COUNTIES COOPERATING

Y.E.S. Quarterly

Vol. 2, No. 3

ADVISOR

Gary A. Dunn

EDITORS

Kathy Smith

Dana Hayakawa

Susan Hausmann

PRODUCTION EDITOR

Susan L. Battenfield

INFORMATION FOR AUTHORS

Manuscripts and original artwork on any insect or Arthropod-related topic are welcome for publication in Y.E.S. QUARTERLY. Articles with special interest to young entomologists will receive publication priority. Manuscripts may be of any length, but should be double-spaced and typed (or neatly written). Photographs or maps should be done in black and white, and any drawings, charts, or graphs or maps should be done in black ink and should fit in the new page size. All authors should supply a title for their article and a complete mailing address. We're sorry, but no page proofs can be furnished.

Other features, including news, field notes, book reviews or other illustrations, are also accepted and will be used when space is available.

Members may submit short "advertisements" for the "Trading Post" section, describing their special desires for information, correspondence or specimens. All ads will be edited for brevity and acceptability and their inclusion will be made on a space-available basis.

Send to: Young Entomologist's Society, c/o Department of Entomology, Michigan State University, East Lansing, MI 48824-1115 USA.

Y.E.S. QUARTERLY is published at Michigan State University, East Lansing, Michigan by the Young Entomologist's Society. Y.E.S. is sponsored by the Cooperative Extension Service and Department of Entomology, Michigan State University. The opinions of the authors expressed in this publication are their own and may not represent the views of the Y.E.S. staff and Michigan State University. Membership in Y.E.S. is open to any person with an interest in entomology, regardless of age, race, creed, national origin or handicap. Send all inquiries on membership, manuscript submission or back issues to: Young Entomologist's Society, c/o Department of Entomology, Michigan State University, East Lansing, MI 48824-1115 USA.

REPORT FROM HEADQUARTERS

Well, here we are in the midst of the summer collecting season (at least for those of us living in the northern hemisphere). I hope your collecting is productive. For those of you living south of the equator, are you getting caught up on your pinning, labeling, and determining? No matter where you live or what the season, why not sit down and write an article about your entomological activities, projects. . .or whatever. We'd like to hear from you!

I am happy to report that our membership continues to grow. We have 374 members (15 May 1985). Things are busy at Y.E.S. headquarters. Thanks for your cards and letters. I especially appreciate your ideas and suggestions. We are always looking to improve our Society and our journal. Look elsewhere in this issue for information on our specimens swapbox program, and for new journal features. Please continue to send us your suggestions and opinions.

During the week of August 5-11 (1985) I will be busy promoting Y.E.S. at the Florida Entomological Society meeting in Ocho Rios, Jamaica. I don't intend to come home empty handed, so I have set aside some time to do a little beetle collecting. I hope I will see some of our members there. I also expect we will recruit some new members.

Each and every member of our Society can help with promotion. Visit your local natural history museum, nature center, zoo, library or school and ask if you can set out some of our brochures. They might even be interested in having a display or talk. We can send you all the brochures you think you will need for these activities. You might even want to contact your local newspaper about your participation in Y.E.S. We're proud of our Oregon members who were recently featured in their local paper! Thanks to your help our Society continues to grow.

One last note. In April we ran out of the 1984/85 Member Directories. Additional copies are being printed, and if you have not received one by the time you read this issue of Y.E.S. Quarterly, let me know and I will send you one.

Gary A. Dunn
Y.E.S. Advisor

WANTED:

TWO ART EDITORS FOR Y. E. S. QUARTERLY

- DUTIES:** (1) provide illustrations and artwork to accompany submitted articles.
(2) provide artwork for covers and filler between articles.
(3) redraw "rough draft" artwork and sketches.
(4) other duties as requested by editorial staff.

ACKNOWLEDGEMENTS: (1) listing on inside cover as "Art Editor." (2) credit citation given with each individual illustration.

INFORMATION/SIGN-UP: Contact Gary A. Dunn, Y. E. S. Advisor, Dept. of Entomology, Michigan State University, East Lansing, MI 48824-1115 USA.

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Cover Illustration:

Rendition of the primary screwworm blow fly, Cochliomyia hominivorax, which is one of the most serious myiasis-producing insects of cattle and man in Central and South America. Prior to the 1950's it was distributed over the southern United States, extending seasonally northward to Kansas, Illinois, and southern Canada, but today it has been eradicated in these areas by the release of mass-reared sterile flies (the earliest successful application of this type of biological control). Currently, millions of sterile flies are bred weekly at a new plant in Tuxtla Gutierrez, Chiapas, Mexico as part of a joint effort by the United States and Mexican governments to suppress C. hominivorax in Mexico.

submitted by Donald Baumgartner, M.S.

**TIEG/Y.E.S. 20th ANNIVERSARY:
A SYNOPTIC HISTORY OF THE TEEN INTERNATIONAL
ENTOMOLOGY GROUP AND THE
YOUNG ENTOMOLOGISTS' SOCIETY**

**Gary A. Dunn
Department of Entomology
Michigan State University
East Lansing, MI 48824-1115 USA**

Earlier this year it was suggested that we publish a history of the Teen International Entomology Group (TIEG) and Y.E.S. since this year marks the 20th anniversary of the groups' founding in 1965. The task has fallen to me, and I prepare this article somewhat hesitantly since I have no first-hand knowledge of the early days of the organization. This history is assembled from the various publications, files and letters I have on hand. I hope you will forgive any oversights or small errors, as they are certainly not intentional. Also, I would dearly love to hear from members of long-standing and learn of their experiences. I know some of you are still out there. Please write.

TIEG was formally organized by Colleen Seeley and Carol Tubbs of Oneota, New York, in the spring of 1965. Where did the idea for TIEG come from? Colleen, founder and first editor-in-chief, wrote, "TIEG began with butterflies in my mailbox. After corresponding and trading insects with 20 or so teen-aged entomologists across the country (U.S.), we started exchanging names and addresses of others who had similar interests. This was the start of the Teen International Entomology Group. My county 4-H agent agreed to mimeograph TIEG membership lists (which totaled about 80) along with a bibliography prepared by Carla Bender of Fruita, Colorado. Our members were mainly from New York State but we also had some from 10 other states and five or six countries."

Dr. Warren T. Johnson, with the New York State Cooperative Extension Service at Cornell University, offered his assistance as advisor and in the spring of 1965 the first formal TIEG Newsletter was issued. It was 4 pages long and was sent free of charge to 128 young people and 28 adults living in Japan, England, Cuba, Australia, Ireland, Sweden, and the United States.

In 1966 the concept of regional editors was initiated to spread the workload and give more members a chance to

participate in the operation of the organization. Incidentally, in the same year Senator Robert Kennedy sent his congratulations by letter to the fledgling organization.

In 1967 there were 800 members on the rolls. Most of the members collected, studied, traded or reared Lepidoptera. There appeared to be very little representation or interest in other insect orders, a fact which those few members complained about in their letters to the editor. During this year a new emblem was adopted, and it featured a 4-leaf clover, a butterfly and the letters TIEG.

By 1968 the Newsletter ran 32-36 pages in length and featured news on what the members were doing, as well as a few feature articles on collecting, rearing and exchanging techniques and the like. The organization boasted a membership that represented all 50 U.S. states and 30 other countries. The year 1969, on the other hand, was not a good year for TIEG. No publications were issued because of financial difficulties. The membership had grown far more rapidly than expected and had exceeded the available resources. And so nominal dues were proposed and initiated. The T.I.E.G. Newsletter appeared in 1970 and was much improved. Financial support was received from the Entomological Society of America (ESA), the American Mosquito Control Association, and the New York State Cooperative Extension Service.

In 1971 Colleen Seeley stepped down as editor-in-chief. Dick Arnold (Illinois) became the new editor-in-chief. Continued funding by ESA allowed for the publication of four, rather than two, Newsletters. In 1972 the Entomological Society of Canada began to contribute to the financial support of TIEG.

In the fall of 1973 George Foster (Maryland) became the third editor-in-chief; he is succeeded by Robert Dirig (California) in 1975. In this same year Ms. Roxanna Barnum (Cornell University) celebrated her ninth year of typing the TIEG Newsletter. The importance of this job has always been underestimated, and Ms. Barnum is certainly one of the unsung heroines of TIEG.

The year 1976 was also bad for TIEG. The support for TIEG at Cornell University had fallen victim to budget cuts, and a search was undertaken to find a new home for the organization. In 1977 TIEG moved to Michigan State University. Dr. Roger Hoopingarner became the organization's new advisor. Paul Castrovillo assumed the duties as editor. The membership roles stood at 900 in 1980 and continued to decline as the publication schedule remained erratic and tardy. In 1982 the

ESA withdrew their financial support and declined support for 1983. The sudden removal of these funds caused the TIEG publications to be curtailed. One final attempt was made to revive TIEG in 1983 but it also failed. By the end of 1983 the membership had declined to 350.

In early 1984 I took over as advisor and offered a scheme to reorganize the defunct group. After receiving assurance of institutional support from the MSU Entomology Department, I set out to restore the organization. The remaining TIEG members were surveyed by mail to obtain information and ideas for a reorganization. The feedback from the survey suggested that a rather radical overhaul would be necessary to get things back in order. To overcome years of empty promises and to catch up with the changes TIEG and its members had undergone over the years, I decided a name change would signal a rebirth of the organization. And so the Young Entomologists' Society came into existence. Although this group still has a special commitment to teens, it is also well suited to the needs of "young" entomologists of any age.

So, in 1984 the group began anew, renamed and with a reformatted 6 x 9" journal, Y.E.S. Quarterly. The group is supported financially not only by its members, but also by the Cooperative Extension Service of Michigan State University and the Entomological Society of Canada. The "new" society had 236 members at the end of its first year. Several dozen members volunteered to act as section advisors, their job being to assist other members with technical information in the area of their expertise.

Production of the journal is overseen by myself, as a technical editor, and our production editor, Susan L. Battenfield, assisted by Susan Hausmann, Dana Hayakawa, and Kathy Smith. As advisor I have also taken the responsibility for administration of the finances, mailing list, member sign-up, article acknowledgement and other organizational details. (Now you know who to blame!)

I am happy to say that we recently recruited our 375th member, and by the time you read this we will hopefully be closer to 400 members. But no matter how many members we have, the Society can not function without YOUR participation! We are in constant need of articles and artwork for the journal. (In all honesty, I sat down to write this article because we needed more material for the summer issue!) Everybody has something they can share with the other members and readers. Come on, send something in and become a published author. Any of you original TIEG members, have I missed any signifi-

cant events in the life of TIEG? Does anybody know the whereabouts of Colleen Seeley?

I know that the Young Entomologists' Society will thrive for years to come, and it won't be long before we're celebrating another 20 years!

Table 1. TIEG/YES Publications, 1965 - 1985.

Vol.	(No.)	Dated	No. pages
TIEG NEWSLETTER and MAGAZINE			
1	(1)	Spring 1965	4
	(2)	Summer 1965	7
	(3)	Fall 1965	11
2	(1)	Winter 1966	17
	(2)	Spring 1966	23
	(3)	Summer 1966	21
	(4)	Fall 1966	22
3	(1)	Winter 66-67	31
	(2)	Spring 1967	31
	(3)	Summer 1967	33
	(4)	Fall 1967	34
4	(1)	Winter 67-68	31
	(2)	Spring 1968	49
	(3-4)	Summer-Fall 68	42
5	(1-2)	Spring-Summer 70	39
	(3)	Fall 1970	39
	(4)	Winter 70-71	38
6	(1)	Spring 1971	35
	(2)	Summer 1971	47
	(3)	Fall 1971	39
	(4)	Winter 1971	34
7	(1)	Spring 1972	39
	(2)	Summer 1972	39
	(3)	Fall 1972	39
	(4)	Winter 1972	39
8	(1)	Spring 1973	40
	(2)	Summer 1973	40
	(3)	Fall 1973	40
	(4)	Winter-Spring 74	36

Table 1 (continued).

Vol.	(No.)	Dated	No. pages
9	(1)	Sept. 1974	44
	(2-3)	January 1975	44
10	(1)	May 1975	41
	(2)	Sept. 1975	41
11	(1)	Spring 1977	44
	(2)	Fall 1977	44
12	(1)	Spring 1978	40
	(2)	Fall 1980	40
13	(1)	Summer 1981	40

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1	(1)	Winter 1984	40
	(2)	Spring 1984	32
	(3)	Summer 1984	28
	(4)	Fall 1984	34
2	(1)	Winter 1985	38

Table 2. Selected TIEG/YES Membership Figures, 1965 - 1985.

TIEG - 1965	156	YES - 1984	236
1967	800	1985*	374
1971	2000		
1975	2816		
1977	1500	*Jan.-May only	
1980	900		
1983	350		

SOMETIMES INSECT CAMOUFLAGE BACKFIRES

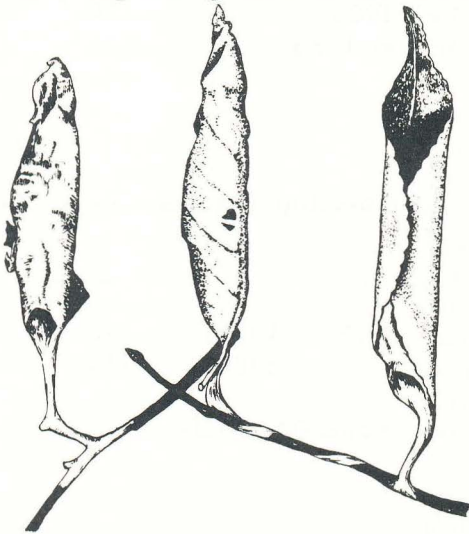
Paul Castrovillo
1725 Broadway
Boise, Idaho 83706

If you ever need a good example of camouflage look to the world of insects. Of all the organisms on earth, probably more than any other, insects have evolved to blend in with their backgrounds, look like inanimate, inedible objects, or manipulate their surroundings so that they are cleverly hidden from the army of parasites and predators which are always searching for them.

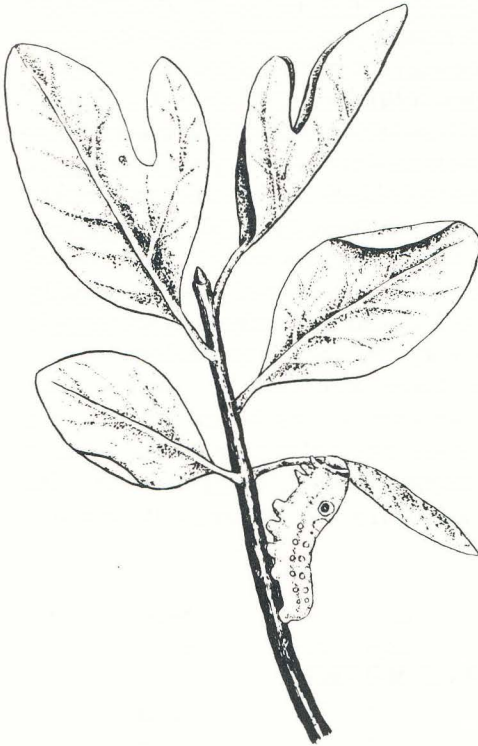
Many of their disguises are superb. Classic examples of protective coloration abound. One of these, the Indian leaf butterfly (Kallima inachus: Nymphalidae) has wings with undersides which are almost indistinguishable from a dead leaf. The illusion is complete right down to a shadowed leaf midrib and what appear to be small mold spots. Some tropical mantids blend in extremely well with the orchids they imitate. Even in the U.S. cases of insect camouflage are easy to find (or hard to find, depending on how successful they are). Many underwing

moths (Catocala spp.: Noctuidae) fold their mottled forewings over their brightly-colored hindwings and blend in exceptionally well with the tree bark upon which they perch. Walking sticks (Phasmidae) do great imitations of twigs. Some treehoppers (Membracidae) look like thorns.

Aside from using mimicry to blend in with their surroundings, some insects actually camouflage themselves by altering materials around them for protective purposes. The caddisfly larva (order Trichoptera) makes a case for itself by spinning a silken tube and incorporating



Promethea moth (Callosamia promethea) cocoons wrapped on dead leaves. The leaf petiole is usually attached to a branch by a coating of strong silk.



Spicebush Swallowtail larva
(Papilio troilus) on sassafras
branch. Younger larvae are hidden
beneath edges of rolled leaves.

bits of grass, dead leaves, sand, or small pebbles. This aquatic insect carries the case around with it and retreats within when danger threatens. This same behavior pattern is found in the terrestrial bagworm moth larva (Psychidae). Some inchworms (Geometridae) which feed on flowers chew small pieces off of the flower petals and attach them to their bodies. Tortoise beetle larvae (Chrysomelidae) have a fork at their tail end upon which they collect feces and dried cast skins. When resting they hide beneath the mass which they hold above themselves like a parasol. A fairly large number of insects seek protection, both in the larval and pupal stage, by wrapping themselves in leaves of their foodplant.

Overall, the above protection devices must be efficient against parasites and predators because they are so commonly found in the insect world. They can back-

fire, however, when that great predator, the insect collector, learns to recognize them. I know that on many occasions, when I've been able to key in on an easily discerned camouflage, it has enabled me to be more successful at finding specimens of that insect than if I had to seek out "unprotected" specimens.

When I was younger, I often dreamed of finding a specimen of any of the large silkmoths (Saturniidae) that were supposed to be so common around my New Jersey home. I looked for the adults and larvae constantly with no success. Then one spring day I discovered my first Callosamia promethea cocoon dangling from a wild cherry branch, wrapped in a dry, dead leaf. Once I learned to recognize that characteristic image I had no trouble finding C. promethea cocoons by the dozens (sometimes by the hundreds)—I could even spot them while driving in a car.

A similar situation occurred with the larvae of the Spicebush Swallowtail butterfly (Papilio troilus). The caterpillar feeds on sassafras leaves. When young the larva folds the edge of a leaf over itself for protection. As it gets older more of the leaf is folded over. A large larva folds the leaf in half, almost making a tube around itself. With a little experience I learned to scan the branches of a sassafras bush and quickly detect larvae, if present, by finding leaves folded in the characteristic fashion. In my area, it was also common to find caterpillars from the family Tortricidae and some spiders which also folded or rolled sassafras leaves. However, they did it differently enough so that 9 times out of 10 I could tell whether or not it was a P. troilus larva just by the way the leaf was folded.

Patterns of behavior which have evolved to protect an organism from certain enemies can sometimes be exploited by a new hunter of that species. In your collecting or nature study observe carefully your quarry's interaction with its habitat. Its protective camouflage may actually help you to track it down.

SPECIMEN SWAP BOXES

Just about everyone has extra specimens they would be willing to exchange if they were given the chance. Well here's your opportunity.

Here's basically how the operation will work. Several boxes of assorted specimens will be circulated among interested Y.E.S. members. When the box arrives in your mailbox you may extract and keep as many specimens as you like, PROVIDED you replace them with an equal or larger number of specimens. When you're done, send the box on to the next member on the list. As the boxes circulate, the contents will change.

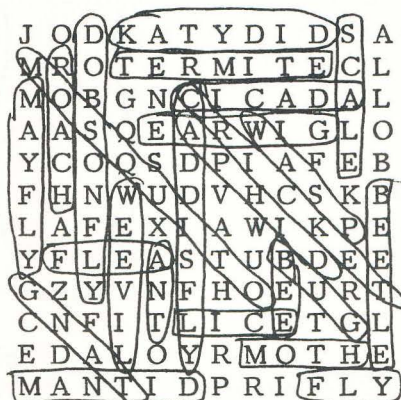
There are only a few simple rules that all participants must obey. (1) All specimens should be in A-1 condition. (2) All specimens should have complete (and legible) collection data (determinations, however, are optional). (3) You should not keep the box any longer than one week. (4) The sender accepts responsibility for postage (the package must be sent airmail if sent overseas). The box will be set up so it can accommodate both pinned and papered specimens.

Interested? Want to know how you can become a participant? It's simple, to get your name on the mailing list, send 5 (or more) specimens (any order/family/species) to Gary A. Dunn, Y.E.S. Advisor, Department of Entomology, Michigan State University, East Lansing, MI 48824-1115 USA. The boxes will be assembled at MSU and sent out by September 1, 1985. See the 1984/1985 Membership Directory (Misc. Pub. No. 1) for suggestions on how to properly mail your insect specimens. If you have any questions or comments, please contact me at Y.E.S. headquarters.

Gary A. Dunn
Y.E.S. Advisor

LAST ISSUE'S WORD PUZZLE ANSWER

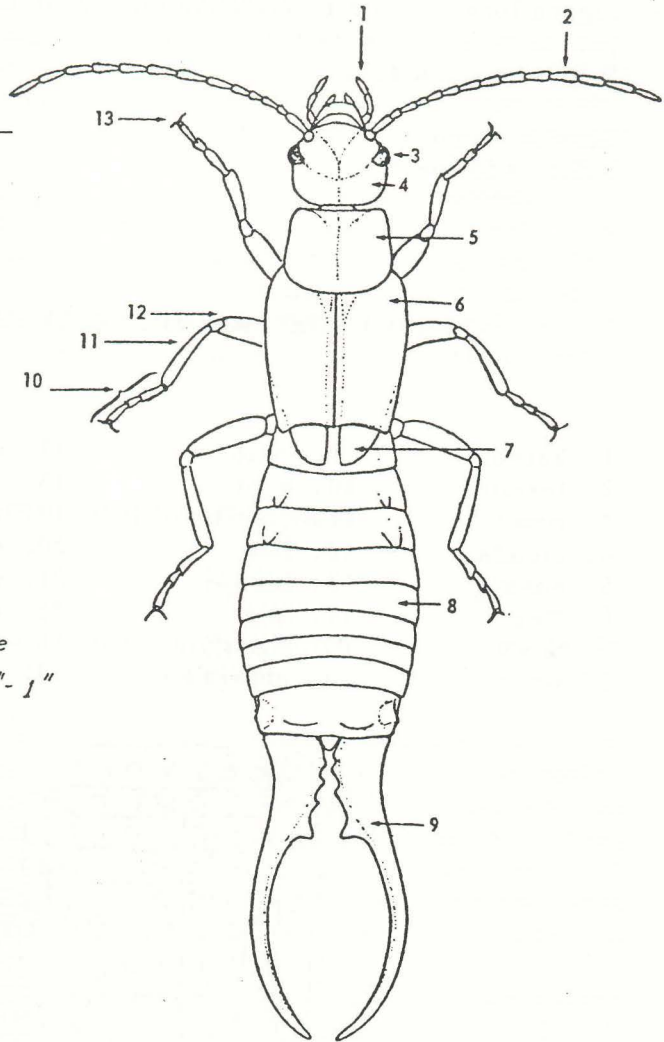
- | | | |
|------------|--------------|---------------|
| 1. katydid | 9. gnat | 17. ant |
| 2. termite | 10. gnat | 18. dobsonfly |
| 3. roach | 11. mayfly | 19. wasp |
| 4. cicada | 12. lice | 20. cricket |
| 5. earwig | 13. beetle | 21. scale |
| 6. flea | 14. bee | 22. caddisfly |
| 7. moth | 15. weevil | 23. bug |
| 8. fly | 16. mosquito | 24. aphid |



NAME THE PARTS

Can you name the numbered body parts in this illustration? A list of the parts is given below to assist you in completing this challenge. The answers are given on page 17.

Order _____



*Actual size
about $\frac{1}{2}$ " - 1"*

- | | | |
|---------------|----------------|----------------|
| _____ abdomen | _____ femur | _____ palps |
| _____ antenna | _____ forceps | _____ pronotum |
| _____ cerci | _____ forewing | _____ tarsus |
| _____ claw | _____ head | _____ tegmina |
| _____ eye | _____ hindwing | _____ tibia |

MOUNTING INSTRUCTIONS FOR BEETLES

Connie and Chuck Ianni
Ianni Butterfly Enterprises
P.O. Box 81171
Cleveland, Ohio 44181 USA

Often when you receive preserved beetles, they are stiff. They need to be properly softened in a moist environment. This process is called relaxing.

Equipment Needed

(1) Relaxing chamber. A Tupperware[®] container with a lid approximately 5"x7"x2" is ideal. An alternative would be a large margarine container or some other similar plastic container. Do not use metal, it will rust. (2) Mounting board. A block of styrofoam about 12"x12" at least 1 inch thick is ideal. An alternative is balsa wood at least 1/4 inch thick. (3) Insect pins and forceps. Proper pins are important. Use ELEPHANT OR IMPERIAL BRAND mounting pins because they go in beetle bodies easily and will not rust or corrode over the years. Size #3 is average and can accommodate most beetles but various sizes are recommended to have on hand. Forceps are optional although they do help when positioning legs. Forceps should have spaded or spatula tips. (4) Moth crystals. The use of moth crystals or moth ice is highly recommended to prohibit mold and to kill parasites or dermestids should they exist. The best crystals contain the chemical Paradichlorobenzene (PDB) which is stronger than Napthalene in typical moth balls. (5) Other supplies. Terry cloth rags (wash cloths are ideal) or paper towels as an alternative, scissors, Crazy Glue or good household cement for repairing any breakage, and data labels.

Preparing the Relaxing Chamber

Place a teaspoon of PDB on bottom of relaxing chamber. Generously dampen terry cloth rag or several paper towels with hot water and place rag on top of PDB (water is the only moisture you actually need).

Relaxing Specimens

First, transfer names of beetles, countries of origin, date of capture, etc. on to data labels and set aside. (This label will eventually be placed under specimen in your display case).

Remove beetle from whatever package it comes in. Do this gently, so you do not break any parts off. Lay specimen on top of wet rag in relaxing chamber. Dampen another rag and lay on top of beetle(s) for ultimate moisture conditions. Put lid on and set aside for at least 12 hours.

If you leave beetles in their plastic wrapper, make several slits in the plastic to allow moisture in. This will lengthen relaxing time. Water does not hurt beetles in any way. Sometimes colors will darken but after specimen dries, color becomes natural. The length of relaxing will vary due to the size of beetles. In general, small beetles relax in 12 to 24 hours, larger beetles may take up to 36 hours or longer.

Deciding if Beetle is Ready to Mount

Remove beetle from relaxer, and from wrapper if you left it on. Gently attempt to move legs. Each leg should be moved individually without struggle. The most important area of movement is the 'ball joint' where legs attach to body underneath beetle. If these joints do not move freely, you will not be able to properly position the legs. Jaws, horns, antennae and other parts should also move easily. If you meet resistance relax specimen for a longer period of time. Be patient.

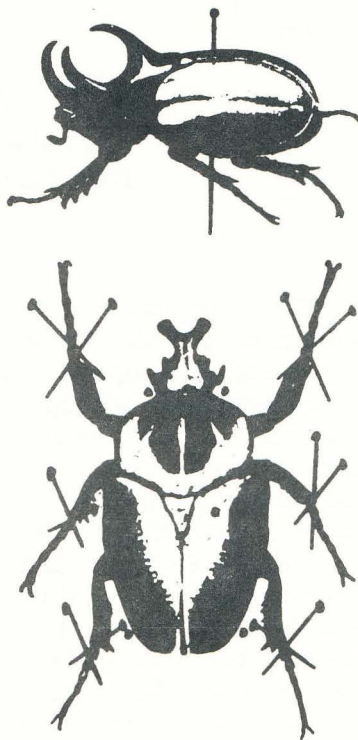
A properly relaxed beetle will feel like you just captured it, all parts move without struggle. It is better to leave it in the relaxer too long which only makes it limp and lengthens drying time, rather than under-relaxing, which causes you unnecessary repairing from parts breaking off.

Mounting Beetles

The most difficult part of mounting and the most important part is to stick the main pin completely through the body of beetle and getting it in straight. This is accomplished by inserting a pin through left or right side of elytra (shell) allowing the pointed end to protrude out of the bottom of specimen which will anchor beetle onto mounting board (see illustration). Make sure the pin enters the body straight (perpendicular) and does not go through a leg or join when you're inserting it. Make sure 1/2 inch or more of pin protrudes above specimen. We recommend the belly of beetle is not pressed against mounting board, but instead, raised enough to give a natural, almost 'walking' appearance. When pinning beetle onto the mounting board, make sure beetle is parallel with mounting board. A beetle taking a 'nose dive' is very hard to mount.

After pinning beetle onto board use a few pins along each side of specimen to keep it from swiveling. Extend legs individually and cross pin to anchor in place. Also position antennae, horns, and jaws using cross pinning. When finished, leave on board to dry (see illustration). Everyone has their own preference on how a beetle should look mounted. Technically, there is no established way, you are the critic and the choice is yours.

After beetle has dried for at least 24 hours (longer for large specimens) it should be now stiff and will retain this position. Remove all pins gently, except the main pin in the body. If claws or parts break off don't panic. Glue will mend anything back in place with a little practice. The beetle is now ready to pin in your display case. Use an extra pin on each side of beetle to prevent swiveling. Put data label under specimen. Keep some PDB in your display case.



Speed Relaxing

This technique is not recommended but with practice can be used when time is limited. Float beetle on top of boiled water for a few minutes at a time checking often until legs move as they should. Dip head, jaws, antennae in hot water until moveable. Length of time varies for large or small specimens. At times colors can be altered temporarily, or permanently.

**TRAPPING THE PEDESTRIAN INSECT
(OR, ONE OF LIFE'S PITFALLS)**

**Brad Stiles
Microbiology Department
Giltner Hall
Michigan State University
East Lansing, MI 48824 USA**

There are many types of traps that can be used by entomologists to aid them in collecting of insects and other terrestrial arthropods. Many, however, depend on the insect's flying ability or willingness to come out into the open (e.g., the black lights, Malaise trap, CO₂ bait traps for adult mosquitos, and others). But what about insects that are secretive, preferring to stay on the ground, crawling among the grass roots or leaf litter? You can bring in bags filled with sod or leaf litter samples and extract the arthropods by using a Berlese funnel. But this requires building a Berlese funnel setup and frequent trips into the field to collect samples. Another method to collect these insects is by using pitfall traps. In their simplest form, these are merely containers such as cans or jars sunk into the earth so that their tops are flush with the ground's surface (Borror, DeLong, and Tripplehorn). The unwary arthropod falls into the container and is trapped in a preservative fluid. This allows you to continually sample the insect fauna in a given area and collect the catch at daily or weekly intervals. For the last 7 or 8 years, I have been using a very simple but effective pitfall trap system which I will describe for those of you who might be interested in collecting more extensively from these types of habitats. The traps are cheap enough that large numbers can be set out at a variety of different locations. I originally read about this system in a journal article but I have unfortunately lost the reference to the original paper so I can not include it here. The traps are constructed using 3 different sizes of plastic beverage cups, shown in Figure 1. Although Solo brand cups were specified in the paper, any kind can be used as long as they can be fitted together in the way illustrated. The large 16 oz. outer cup should have a few holes punched in the bottom of it to allow rain water to drain out. A small hand trowel can be used to dig a hole in which the trap is placed, its top flush with the ground's surface. Some people use bulb planters or golf green hole

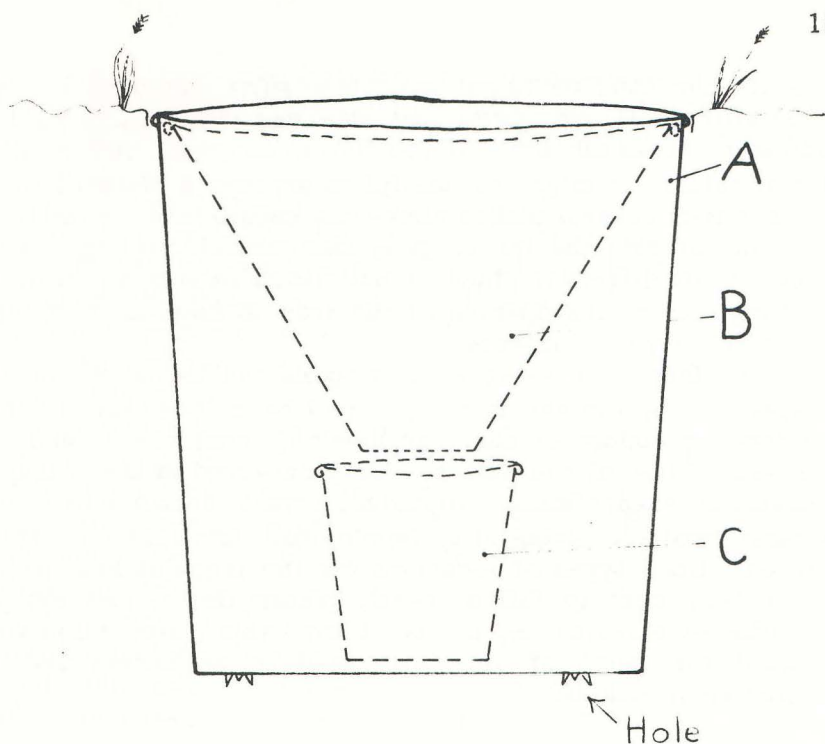


Figure 1. Diagram of an inexpensive pitfall trap.

A- 16 oz plastic Solo brand cup, top diameter 98 mm, 124 mm deep.

B- Solo plastic cozy cup (coffee cup liner with the bottom cut out).

C- 3.5 oz plastic Solo brand cup.

cutter for this purpose although they are more expensive and may not produce a hole with a diameter large enough to accept the trap. The small 3.5 oz cup is partially filled with a killing/preservative fluid such as this long lasting one:

600 ml water

400 ml car antifreeze (the cheapest available)

5 ml formaldehyde solution (40%)

1-2 ml liquid dishwashing detergent

The formaldehyde solution can be obtained from a local drug-store, but it should be handled carefully as it and its vapors are slightly poisonous.

When I collect my catch, I use a small piece of plastic window screen material to strain out the insects and debris which I then place into a jar with 70% ethyl alcohol. The old preservative fluid can then be mixed with some fresh fluid and reused (unless it has been severely diluted by heavy rain). The

insects can then be taken home and sorted at your leisure (if they still smell strongly of formaldehyde strain them again and add some fresh alcohol). If you live in an area which receives a lot of rainfall it might be helpful to arrange a piece of wood to form a roof several inches above the cups to reduce the amount of rain entering the traps. It is also possible to suspend small amounts of different kinds of bait (such as rotting fruit, meat or fungi) above the opening of the trap to increase the capture of certain types of insects.

A variety of interesting arthropods can be caught in pitfall traps. Among the non-insect groups I have found many types of spiders, pseudoscorpions, millipedes, centipedes and symphylans. Some of the insects I have captured in these traps are carabidae, staphylinidae, silphidae, several families of bark and fungus beetles, springtails, lepidoptera larva and scorpionfly larvae. Good types of locations for the traps include woodlots (especially next to fallen trees), grassy fields, and along the margins of streams and ponds. I hope this information will be helpful for those of you interested in collecting the more secretive of insects.

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"FIELD NOTES" **A NEW FEATURE IN Y.E.S. QUARTERLY**

Gary A. Dunn
Department of Entomology
Michigan State University
East Lansing, MI 48824-1115

Beginning with the summer issue of Y.E.S. QUARTERLY we will run a new feature section in our journal entitled "FIELD NOTES." What's this all about, you say? Read on and find out.

Many professional state and national entomology journals and periodicals have lost interest in the value of published field notes. As these organizations have "matured" and become more

sophisticated, they have become very reluctant to publish the results of field work (collecting) by enthusiastic faunal investigators, collectors, and entomologists, professional, amateur, and youth alike.

I am convinced that the publication of collecting data and field notes is a valuable service to the entomological community and should be encouraged. I'm not just referring to the results of month or season-long expeditions to far away, exotic places, but day-long or weekend excursions into local woodlots, fields, parks, and the like. There may be many surprises even in our own backyards.

Why is this information too valuable to go unpublished? I think there are at least four good reasons: (1) it helps provide a data base for insect researchers and investigators to work with; (2) it expands our knowledge about insect distributions (after all, no one collector can be everywhere); (3) it expands our knowledge on trends in insect populations (especially colonization and extinction of local populations); and, (4) aids amateur and youth entomologists in their collections and studies. As a sidelight, this information will also give valuable insight into the effectiveness of various collecting techniques and methods.

Won't you help us with this new project? It's really quite easy. All you need to do is write down the following information about your collecting and send it to us: (1) WHERE--the exact location of the collecting site (country, state/province, and distance to nearest town/landmark); (2) WHEN--the date or dates you collected; (3) WHAT--a list of the species (by scientific name, if possible) and their abundance; (4) WHO--the collector(s) name and address; and, (5) HOW--any special techniques or traps used, or any special observations you made. Send the information to GARY A. DUNN, DEPARTMENT OF ENTOMOLOGY, MICHIGAN STATE UNIVERSITY, EAST LANSING, MICHIGAN 48824-1115 USA and I'll see that it gets published in our journal.

Here are the correct answers to the "Name the Parts" challenge on page 10

<u>8</u>	abdomen	<u>12</u>	femur	<u>1</u>	palps
<u>2</u>	antenna	<u>9</u>	forceps	<u>5</u>	pronotum
<u>9</u>	cerci	<u>6</u>	forewing	<u>10</u>	tarsus
<u>13</u>	claw	<u>4</u>	head	<u>6</u>	tegmina
<u>3</u>	eye	<u>7</u>	hindwing	<u>11</u>	tibia



Close-up of the anterior end of a tiger swallowtail (*Papilio glaucus*) larva. Its head is actually hidden beneath the first segment and the large "eyes" on its thorax are only colorful designs supposedly giving the caterpillar protection from predators. It is resting on a wild cherry leaf, a preferred food plant.

submitted by Paul Castroville, Boise, Idaho

IDENTIFICATION OF NORTH AMERICAN OMUS (COLEOPTERA: CICINDELIDAE)

**Gary A. Dunn
Dept. of Entomology
Michigan State University
East Lansing, MI 48824-1115 USA**

The tiger beetle genus Omus is endemic to the coastal region of western North America, from southern British Columbia to southern California. Several species are restricted to the coastal ranges and foothills, while a large number of species are inhabitants of the Sierra Nevada of California.

The beetles of the genus Omus are flightless and are primarily nocturnal. They usually occur in the forest/meadow ecotones, with some species, like Omus dejeani Reiche, having an affinity toward the meadow. During the daylight hours the beetles are usually found under leaf litter and in/under fallen trees (Maser and Beer 1984).

The key is modified, revised, and updated from Casey (1914 and 1916), Leng (1902), and Nunenmacher (1940). One as yet undescribed species from the Douglas-fir/coast redwood forests of Curry Co.; OR is not included in the key. The remaining species and subspecies follow the nomenclature given in Boyd (1982).

Key to Omus (Coleoptera: Cicindelinae)

1. Elytra oval with numerous large foveae irregularly scattered among the smaller punctures; lateral margins of pronotum acute and without setae; median line of pronotum dilated and foveiform at middle; 15-21 mm; range: British Columbia, Washington and Oregon (Fig. 1).
 dejeani Reiche
- Elytra subcylindrical, with small and sparse foveae among the punctures; median line not dilated and/or foveiform at middle 2
2. Coloration submetallic submetallicus G. Horn
 - (a) ssp. submetallicus - range: northern Sierra Nevada range, CA (Fig. 2)
 - (b) ssp. niger Cazier - range: se Monterey, sw Fresno and nw Kings Cos., CA (Fig. 2)
- Coloration not submetallic, deep black to slightly brownish 3
3. Male/female antennae subequal in length; pronotum narrow, feebly sculptured and deeply declivous at sides; elytra broadest behind the middle 4
- Male/female antennae about equal; other characters not as above 6
4. Body ventricose, elytra very much wider than prothorax
 5

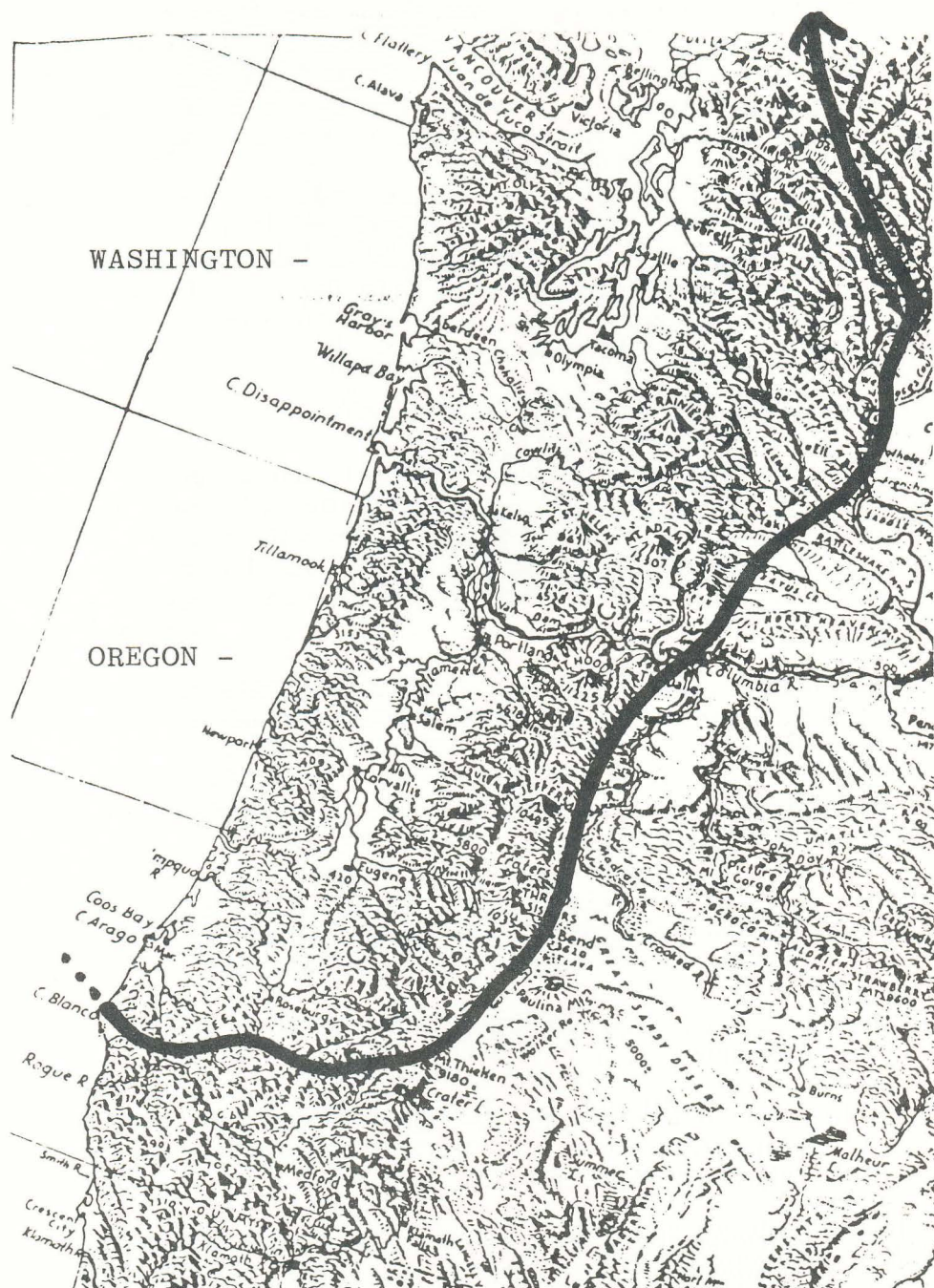


Figure 1. Range of *Omus dejeani* in the United States.

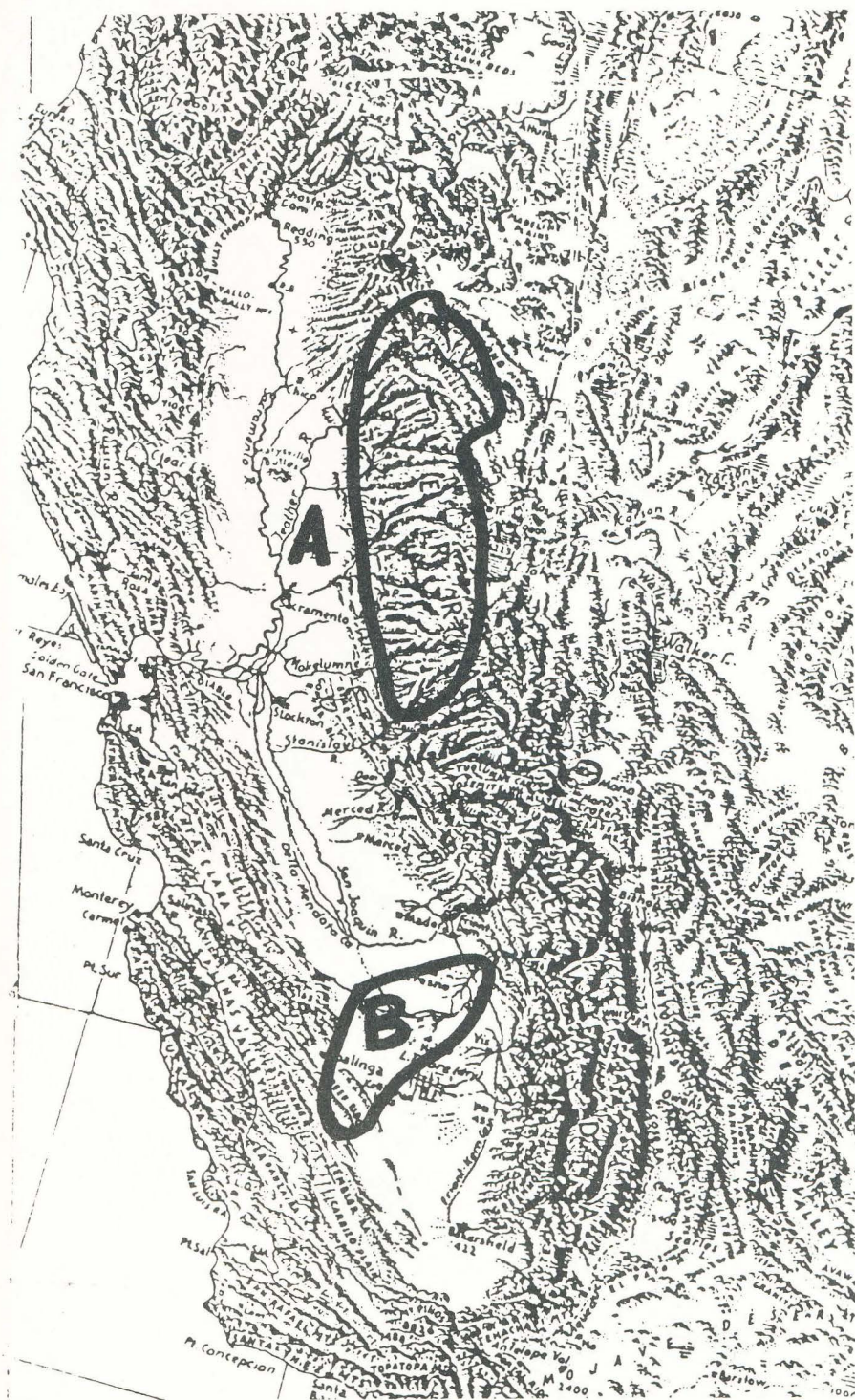


Figure 2. Range of *Omus submetallicus*: A-ssp. *submetallicus*; B-ssp. *niger* in California

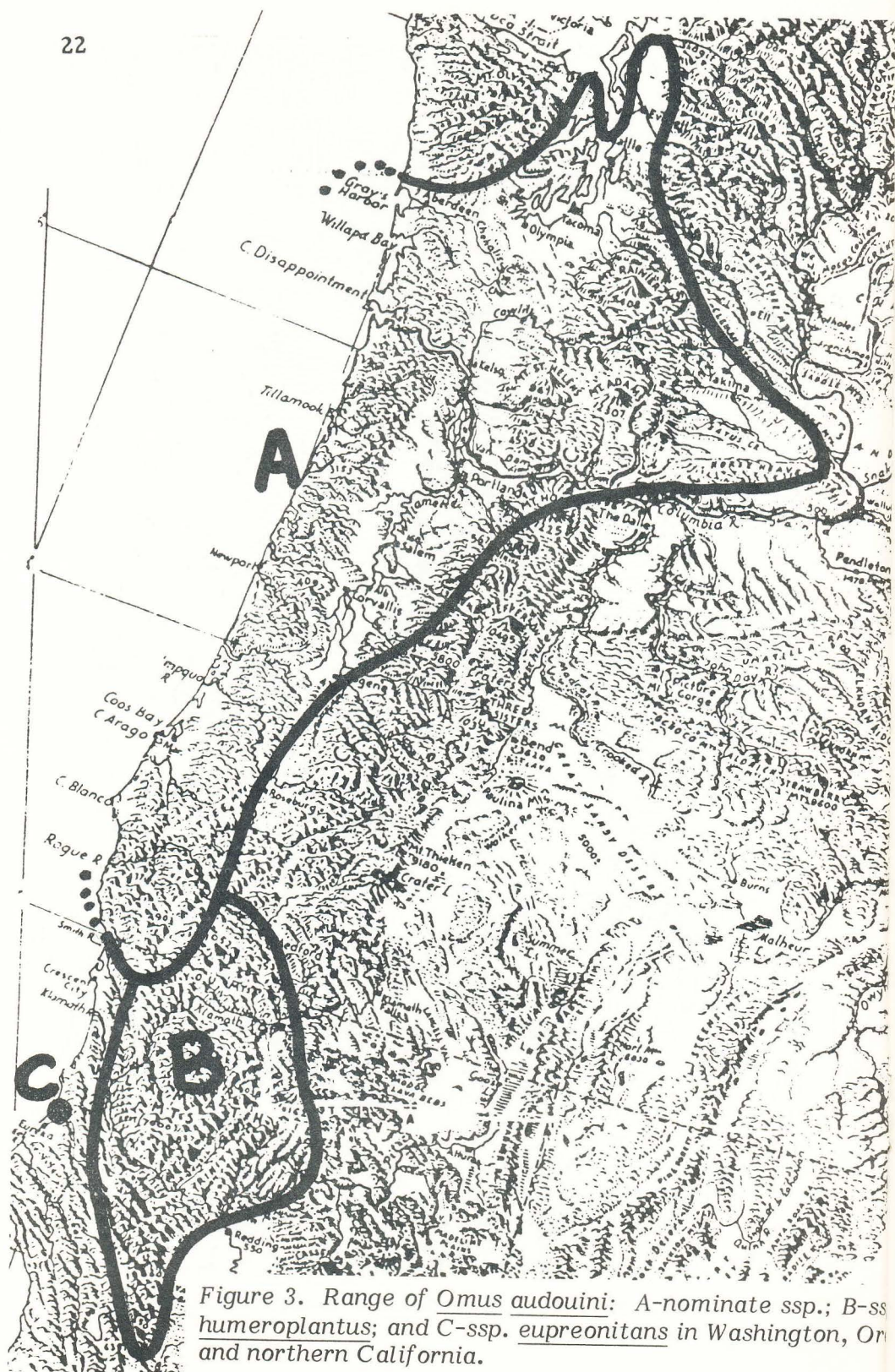


Figure 3. Range of *Omus audouini*: A-nominate ssp.; B-*ssp. humeroplantus*; and C-*ssp. eupreonitans* in Washington, Or and northern California.

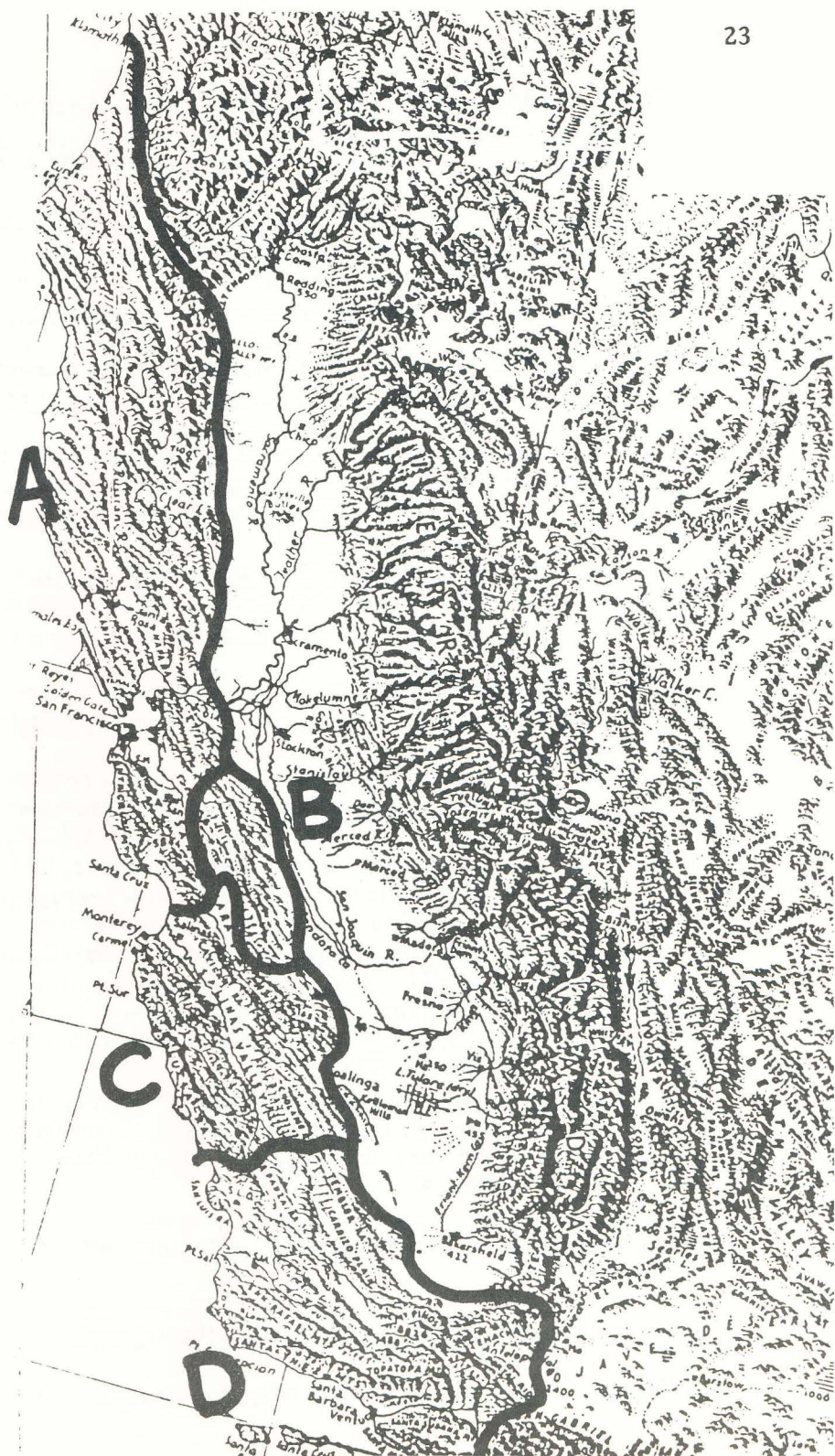


Figure 4. Range of *Omus californicus*: A-nominate ssp.; B-ssp. *subcylindricus*; C-ssp. *lecontei*; and D-ssp. *xanti* in California.

- Body slenderer, elytra only a little wider than prothorax;
range - Lassen and Plumas Cos., CA
. angustocylindricus W. Horn
- 5. Elytral punctures shallow, lineiform (especially near
suture); prothorax wider than long, base strongly
bisinuate; length - 16mm; range - Shasta, c. and e.
Siskiyou and Trinity Cos., CA ambiguus Schaupp
- Elytral punctures rounded and deeper; other characters
not as above audouini Reiche
 - (a) ssp. audouini - range: BC, WA, and n. OR (fig. 3)
 - (b) ssp. humeroplanatus W. Horn - range: Josephine
Co., OR, Siskiyou, Del Norte, and Humboldt
Cos., CA (Fig. 3)
 - (c) ssp. cupreonitans Blaisdell and Reynolds (1917) -
range: Humboldt Co., CA (shiny, glossy
black to cupreous) (Fig. 3)
- 6. Pronotum conspicuously and coarsely rugose; coastal
ranges of California californicus Eschscholtz
 - (a) ssp. californicus - elytra elliptical; prothorax
narrowed behind; labrum bisinuate; range -
Humboldt to Santa Cruz Co., CA (Fig. 4)
 - (b) ssp. lecontei G. Horn - elytra slender, widest
before middle; prothorax less deeply wrinkled
and feebly arcuate in outline; labrum
truncate; range - Monterey to San Benito
Co., CA. (Fig. 4)
 - (c) ssp. xanti LeConte - prothorax much rounded at
sides; range - San Luis Obispo to sw Kern
Co., CA (Fig. 4)
 - (d) ssp. subcylindricus Nunenmacher - elytra
slender, vermiculate-rugose sculpturing fine
and very dense; range - Santa Clara Co., CA
(Fig. 4)
- Pronotum finely and feebly rugose throughout, OR smooth
centrally 7
- 7. Pronotum finely and feebly rugose throughout 10
- Pronotum smooth centrally, only rugose near margin 8

8. Elytral punctures strong, each with an acute anterior granule; range - Tuolumne and Mariposa Cos., CA.
 horni LeConte
- Elytral punctures, when present, perfectly simple and without trace of acute anterior granule 9
9. Elytral punctures present (and simple); range - Madera, Tulare, Fresno, and Kern Cos., CA . . . tularensis Casey
- Elytral punctures absent; range - Tuolumne, Fresno, Mono, and Tulare Cos., CA laevis G. Horn
10. Pronotum widest at apex, sides straight, strongly oblique posteriorly 11
- Pronotum with arcuate (rounded) sides 12
11. Flat (dull) black color; range - Butte Co., CA
 vanlooi Nunenmacher (1940)
- Shiny black; range - Eldorado and Placer Cos., CA
 edwardsi Crotch
12. Form elongate and slender, widest at middle; large - 16.5-21 mm 13
- Form robust, stout 14
13. Front of head smooth and sparsely punctate; elytra elliptical; labral lobe moderately advanced; range - Eldorado, Calaveras, Mariposa, Madera and Tulare Cos., CA. intermedius G. Horn
- Front without punctures; elytra subparallel; labral lobe prominent and broadly rounded; range - Tuolumne Co., CA
 laticollis Casey
14. Very stout, large (14-18mm); range - Eldorado, Calaveras, and Tuolumne Cos., CA sequoarium Casey
- Less stout, smaller (13.5-15mm); range - Sierra, Nevada, and Placer Cos., CA punctifrons Casey

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NOTES ON THE DISTRIBUTION AND ECONOMIC IMPORTANCE OF THE SCARABAEID-BEETLES

Z. T. Stebnicka

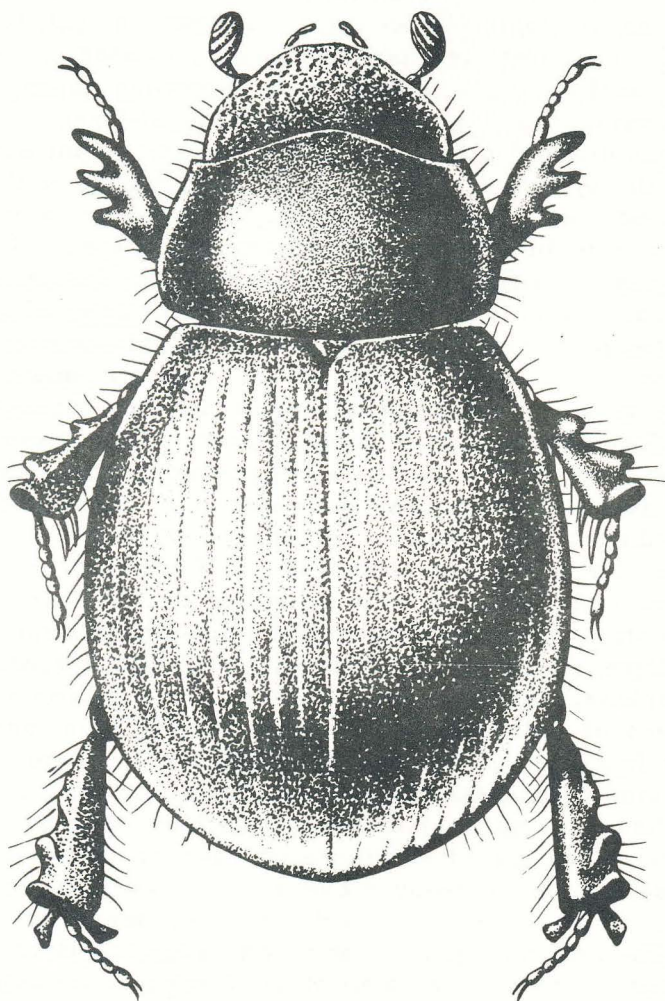
Institute of Systematic and Experimental Zoology
Polish Academy of Sciences
31-016 Krakow, Poland

The superfamily Scarabaeoidea is a fairly differentiated systematic group, which possesses a number of important features that distinguish its representatives from among other groups of the suborder Polyphaga. This, which is one of the biggest and most highly positioned systematic units, includes approximately 1600 genera and over 20,000 species grouped in a number of families and subfamilies. They are characterized by marked morphological and ecological differentiation, and are divided into two main groups: S. laparosticti and S. pleurosticti. The assumed basic criterion of such divisions are morphological features that distinguish the representatives of the two mentioned groups, such as the localization of abdominal respiratory orifices, which in S. pleurosticti occur on the lateral parts of the sclerotized sternites, while in S. laparosticti can be observed in the membrane connecting tergites and sternites on

the sides of the abdomen. Furthermore, the mentioned groups show also an ecologic divergence: species included in S. pleurosticti are mainly phytophagous, whereas the S. laparosticti include coprophages, less numerous saprophages, scarce phytophages, and other highly specialized forms.

There is a distinct difference in the amount of information concerning the systematics, ecology and distribution of the two groups. Numerous species of S. pleurosticti, due to their more evident economic importance, have been the subject of much more abundant publications of a systematic, faunistic and ecological character. The species of S. laparosticti, which are not connected with host plants, possess different environmental predilections and their adaptive mechanisms are much more difficult to register. Most of those species are synanthropic and useful from the economic point of view. The majority of coprophages feed on the feces of big phytophagous mammals, and on cultivated terrain their occurrence is connected with cattle breeding. The massive occurrence of coprophages on terrain used for pasturage is one of the factors of a natural fertilization, since it leads to a spreading of the cattle feces over the whole terrain, sometimes to a considerable depth. The representatives of many taxonomic units, such as Scarabaeinae and Geotrupidae, reproduce in earth chambers interconnected by a systems of channels, and through digging they make the soil loose, friable, and permeable. The hitherto performed ecological studies on pastures and meadows used for pasturage of cattle have shown that large populations of coprophages living in the investigated environment take an active part in soil fertilization, and thereby prevent sterilization of the soil. The results of an Algerian experiment may serve as a good example. The natural manure was spread over the field 20,000 square meters in area. The smell of the fresh manure attracted numerous beetles of the Geotrupidae, and after only a few hours up to 80 individuals of several species could be found on one square meter. It was estimated that a single beetle can spread about 20 grams of manure to the soil, and the subsequent calculations showed, that during a few days, 1,600,000 beetles tugged as much as 32 tons of manure into the soil.

Some species of S. laparosticti possess the specialized feeding predilections for feces of wild-living phytophagous or predacious mammals, and live also in the burrows of small rodents. Most of the species live in open forest clearings, pastures, meadows and steppes or semi-desert terrains. They occur only occasionally in wooded areas, and this concerns mainly saprophagic species. The feeding specialization



Aegialia (s.str.) arenaria (Fabricius) (Scarabaeidae, Aphodiinae)
The psammobiontic, halophilic species, living on the coasts of seas and oceans of Holarctica. General distribution: Europe, eastern coasts of Canada, U.S.A., and Japan.

resulting in occurrence on restricted areas (characterized by the presence of the particular animal feces, rodent burrows, etc.) leads to the occurrence of particular species predominantly in particular biotopes.

The apparition pattern of S. laparosticti is very variable and irregular, since the yearly number of generations depends on climate and on the duration of the vegetation period. The adults frequently hatch late in Autumn and fly out as late as the Spring of the next year. Some species of small beetles, like those of the Aphodiinae, yield two generations per year which means that their development cycle lasts less than a year. The females of Aphodiinae, which do not look after their offspring, blow 20-25 eggs on the average, whereas the females of some Scarabaeinae species blow only 4-5 eggs, since the parental pair looks after the young generation during its whole cycle of development up to the moment of the departure of young beetles from their pupae.

The group of S. pleurosticti contains mostly phytophagous species. The adults consume the green parts of plants, the pollen, parts of the flower corollas and the juice derived from the places of a mechanic damage of trees and their fruits. The developmental environment of the group includes light textured soils, putrefying wood and hollows scooped out in the trunks of deciduous trees. The larvae of most species developing in the soil, mainly such as those of the Melolonthidae and Rutelidae, destroy roots of various wild and cultivated plants. The developmental cycle of these species lasts from one to five years. Frequently an immensely numerous hatch of a particular species can be observed in one region, whereas in other regions emerge equally numerous populations of other species which have finished their developmental cycle in the given period. Already during the larval stages these species have caused harm to the cultures by destroying the roots, the adults subsequently attack the green parts of plants. The described species are therefore potential pests in forest cultures, orchards, vineyards, and plantations of rice, wheat, rye, barley, pea, soya bean, bean, corn, potatoes, cabbage, sugar cane, tea-plant, cotton, tobacco, etc. In spite of the fact that many species live predominantly on particular plants, none of them is an exclusively monophagous species, hence it remains a question of chance which kind of plantation is the feeding ground. On the other hand, the type and chemical composition of the soil, by influencing the larval development, plays an important role in the choice of the environment, e.g., many species show psammophilic tendencies which leads to a local character of appearances of larger populations.

The representatives of Scarabaeoidea inhabit the whole world. It can be generally assumed that the warm part of Paleogeia is a central and organically compact area of their distribution. Neogeia, on the other hand, with its Neotropical and Australian Regions possesses only very few representatives of those tribes and genera that occur in Paleogeia--instead, endemic genera and species are numerous. The termophilic predilections of Scarabaeidae indicate their tropical origin, and in fact, many species characterized by peculiar shape and coloration inhabit the tropical and oriental regions. In the Old World, for example, the actual distributional center of the Scarabaeinae, Cetoniidae and Melolonthidae is localized in the Ethiopian area and in the Arabian transitional zone. The Palaearctica, and especially its warm Mediterranean, Middle- and East-Asian regions, are represented by a large number of species, with the representatives of such typically palearctic groups as Aphodiini and Geotrupidae being particularly numerous. As compared with Asia, the number of European species of Scarabaeidae is relatively small; moreover, most of them occur only sporadically at the moment. The distribution of many species has lost a continuous character, some of the species have completely withdrawn from the continent. The observed regression can be quite obviously related to an intensive industrialization of Europe as well as to the parallelly progressing air pollution and to the introduction of a wide range of chemical compounds into the agriculture. The chemicals penetrating the soil, together with the rainwater, exert a deciding effect on the mortality of the insects, especially at the earlier stages of development and subsequently cause a restriction, or even total annihilation of the population on a particular area. Unfortunately, this also affects beneficial species which play an undoubtedly positive role in the human economy.

The Asian fauna of Scarabaeidae is still far from being well recognized. Some areas of the Middle and Eastern Asia, inhabited by numerous species, have not been hitherto investigated at all, or have been the subject of barely sketchy studies concerning only systematics, whereas the bionomy, ecology and distribution of those species, as well as their role in the human economy, remain unknown.

The above remarks concern also other families of beetles as well as other groups of invertebrates with their great number, variety and substantial biological importance. The reason for such situation seems to be the insufficient number of specialists able to elaborate a comprehensive study of a particular

systematic group. The progress in a better and more detailed knowledge of faunae and its participation in the human economy can be achieved by active cooperation between the scientists from different countries, leading to a collective solving of those ever-actual problems.

MEMBERSHIP REPORT

The following people have joined Y.E.S. since our last publication, or have had changes of address or interests. We encourage you to make note of these additions and changes and we hope that this information is useful.

The codes following the names and addresses are the same style as those used in the Membership Directory, and can be deciphered as follows: first coden item= member number; second coden item = abbreviation of country or state; third coden item = membership category (1-youth, 2-collegiate, 3-adult, 4-sustaining, and 5-institution). The numbers following the colon are the member's interest areas (see Member Directory).

339-HI-2: John S. Strazanac
5, 1, 2 Department of Entomology
University of Hawaii
3050 Maile Way, Rm 310
Honolulu, HI 96822 USA

Blattaria, worldwide, systematics; history of entomology; will correspond, exchange and make determinations.

255-PA-1: Ryan A. Bridge
8, 7, 2 4329 Old Orchard Rd.
York, PA 17402 USA

(Interest revision) North American Lepidoptera: Saturniidae, Lycaenidae (rearing, life cycle, and collection); Coleoptera: Cicindelidae and Scarabaeidae. Will correspond, exchange, and determine.

343-UT-3: Jay B. Karren
7, 8, 12 Utah State University
UMC 49
Logan, UT 84322 USA

*Chlamisinae, Chrysomelidae, Cicindelidae, and
Cerambycidae. Will correspond, exchange, and
make determinations.*

351-SD-1 Jeff Anderson
Box 34
Marion, SD 57043 USA

*Coleoptera, Lepidoptera: identification and
collecting. Will correspond, exchange, and make
determinations.*

355-OR-1: Kyle Yamada
8, 10, 2 3035 N.W. Taft
Corvallis, OR 97330 USA

*Interested in praying mantids, silkworms, and ants.
Will correspond and exchange.*

374-MI-1: Robert J. Bergman
5, 4, 8 24853 Ward
Taylor, MI 48180 USA

*Interested in life cycle studies, collecting,
scientific research techniques, and growth rate
studies. Will correspond and exchange.*

375-JAP-3 Tetsuo Nawa
8,7,5 The Nawa Insect Museum
Gifu Park
2-18 Ohmiya-cho
Gifu City, JAPAN

Butterflies, Scarabaeidae and Lucanidae.

376-VA-2 Joe Despins
12, 4, 9 Department of Entomology
205C Price Hall
V.P.I. and State University
Blacksburg, VA 24061 USA

Interested in aquatic insect ecology, taxonomy of Stratiomyidae, biology and control of livestock insects, medically important insects and agronomically important insects.

378-SC-2 John Cimbaro
8, 7 Columbia Bible College
P.O. Box 3122 USA
Columbia, SC 29230-3122 USA

379-VEN-1 Daniel Cimbaro
Apartado 126
San Cristobal, VENEZUELA
5001-A

377-VA-1 Dana Spencer
2, 11 9004 Sowder Place
Nokesville, VA 22123 USA

380-FRA-3 Jean-Marie Jadot
7 231A Residence Toulaire
54460 Liverdun, FRANCE

All Cetonidae and Cerambycidae from the world, especially Africa.

381-PA-3 Gregory A. Hoover
8, 7, 11 RD #4, Box 171
Halifax, PA 17032 USA

Presently working with forest insects-primarily natural enemies of gypsy moth.

382-MI-1 Kevin Drummond
8, 7, 2 12006 S. Godfrey Rd
Morrice, MI 48857 USA

Has a special interest in Sphinx moths and Coleoptera; likes to rear Lepidoptera.

373-GRC-3 Graham Jones
8, 2, 5 P.O. Box 35 Northside
GRAND CAYMAN, B.W.I.

Butterflies and moths of the Americas and the Carribean area. Will correspond and exchange.

CHANGES OF ADDRESS

256-IN-2 (=256-VA-2)
James Harmon
1800-E Terrace View
Blacksburg, VA 24060 USA

277-IA-3
Steven Gades
1009 West 4th St.
Waterloo, IA 50702 USA

As mentioned in the "Report from Headquarters," our May 1985 membership stood at 374. I thought you might be interested in knowing where our various members live. Geographically, our membership breaks down as follows (see Figs 1, 2, and 3):

UNITED STATES

Alaska - 1	Massachusetts - 9	Rhode Island - 1
Arizona - 1	Michigan - 46	South Carolina - 1
Arkansas - 2	Minnesota - 4	South Dakota - 1
California - 36	Mississippi - 1	Tennessee - 2
Colorado - 8	Missouri - 9	Texas - 9
Connecticut - 5	Montana - 1	Utah - 3
Florida - 12	Nebraska - 3	Virginia - 4
Georgia - 1	Nevada - 2	West Virginia - 8
Hawaii - 3	New Jersey - 11	Wisconsin - 6
Idaho - 6	New Mexico - 1	Wyoming - 3
Illinois - 11	New York - 21	
Indiana - 7	North Carolina - 1	District of
Iowa - 5	Ohio - 13	Columbia - 2
Kansas - 4	Oklahoma - 6	Puerto Rico - 1
Kentucky - 4	Oregon - 15	
Maryland - 7	Pennsylvania	

CANADA

Alberta - 1	North West Territories - 1
British Columbia - 1	Ontario - 6
Quebec - 7	

OTHER COUNTRIES

Argentina - 1	Malaysia - 2
Australia - 1	Netherlands - 1
Belgium - 3	New Zealand - 1
Costa Rica - 1	Poland - 1
Czechoslovakia - 1	Portugal - 1
England - 3	Republic of China - 1
France - 4	Romania - 1
Grand Cayman,	Senegal - 1
W. I. - 1	Sweden - 2
Israel - 1	Soviet Union - 1
Italy - 2	Venezuela - 1
Japan - 4	
Mexico - 1	



Figure 1. Areas where Y.E.S. members live in Asia and Australia (May 1985).

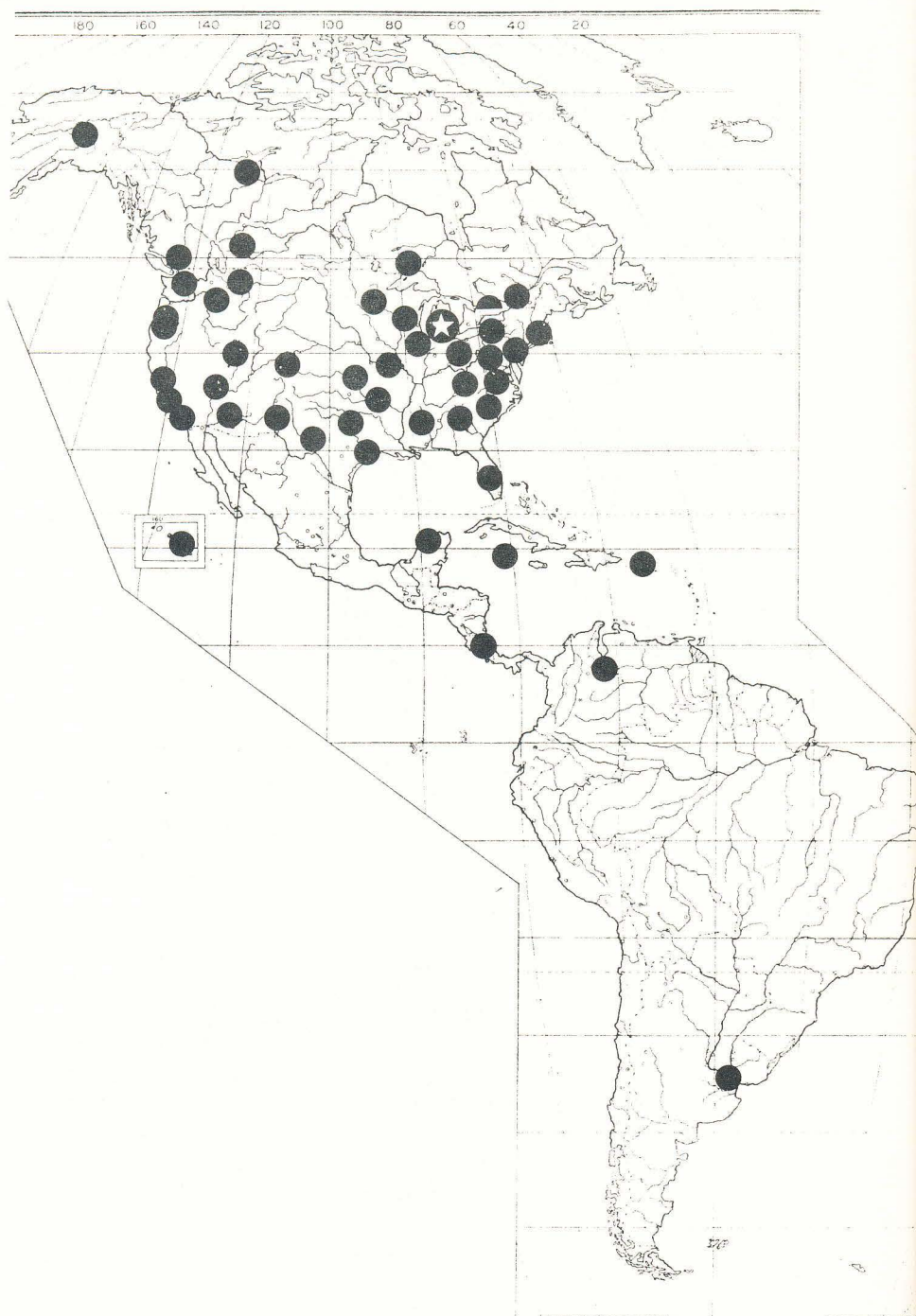


Figure 2. Areas in North and South America where Y.E.S. members live (May 1985). Star denotes Y.E.S. headquarters.



Figure 3. Areas in Europe and Africa where Y.E.S. members live (May 1985).

TRADING POST

FOR EXCHANGE: copies of papers on the Carabidae (Coleoptera), including: Ball and Nimmo 1983, Progaleritina, Kryzhanovskiy-Palaeartic Omophron; Allen, R.T. 1968, Morionini; Darlington, P.J. 1953, Bahama carabids; Brouerius van Nidek 1978, Mexican cicindelinae; Erwin and Kavanaugh 1981, Bembidion; Bousquet, Y. 1983, Stomis; Goulet and Bousquet 1983, new Pterostichus; Moore, B.P. 1980, New Zealand Anillini; Casey, T.L. 1913, Memoirs on Coleoptera; Nagel, P. 1982, Cameroon Paussinae; Hayward 1908, Amara; Lovei, G. 1984, Hungarian maize filed carabids; and, Loreau, M. 1983, Abax ater alimentary region. Will trade for other literature or specimens of Carabidae and Cicindelidae. Send inquiries to: Gary A. Dunn, Department of Entomology, Michigan State University, East Lansing, MI 48824-1115 USA.(2/3)

FOR SALE OR EXCHANGE: All orders of insects from Israel, especially Diptera and Hemiptera. Write for details. Izhak Nussbaum, Nahalat zvi 35, Petack-Tikva 49421, ISRAEL.

WANTED: Ova of Citheronia regalis (royal walnut moth). Write to Jeff Miller, 550 Conifer Way, Ashland, OR 97520 USA. (2/3 only).

FOR SALE: many butterflies, beetles and other insects from all parts of the world. Write for main list and supplementary list every month. FOR EXCHANGE—same for many rarest insects and others. Send your offer. WANTED—all information regarding breeding of Goliathinae, Dynastinae and other Scarabaeidae. Also, we research living material like Dynastes hercules, neptunus, megasoma, Goliathus, etc. Gerald Pelissie, "Les Granges Noires," 01660 Chaveyrait, FRANCE. (2/3)

FOR EXCHANGE: small collection on North American Coccinellidae: 16 determined species, 8 misc. undet. species, 176 specimens in all. Will exchange for misc. Carabidae or Cicindelidae from anywhere but Michigan. Gary A. Dunn, Dept. of Entomology, Michigan State University, East Lansing, MI 48824-1115. USA (2/3)

WANTED: Correspondence with a resident of Japan who has an interest in both Lepidoptera and the Japanese cinema (mostly animated cartoons and monster movies) and who may be a source of merchandise from the movies (specified later) in trade for Lepidoptera or to buy. Send letters to: David Albaugh, 9 Columbia Avenue, Jamestown, RI 02835 USA (2/3)

WANTED: A1 papered specimens or livestock (cocoons, pupae, and ovae) of all Saturniidae. Send prices to: David Albaugh, 9 Columbia Avenue, Jamestown, RI 02835 USA. (2/3)

WANTED: Anything having to do with the moth Argema mittrei, whether it is information, livestock, or papered specimens. Send all lists to: David Albaugh, 9 Columbia Avenue, Jamestown, RI 02835 USA. (2/3)

WANTED: Exchange of Coleoptera, especially Cerambycidae (worldwide). Many types of beetles available from different regions. Gontran Drouin, 50 Principale, Ste.-Henedine, Quebec, CANADA G05 2R0 (2/3)

EXCHANGE: Lepidoptera (worldwide), especially Nymphalidae and Pieridae; also other families—Hesperiidae, Papilionidae, etc., and Coleoptera (worldwide), especially Cerambycidae and Scarabaeidae. All letters welcome and answered. Luis R. Perez, HC 02 Box 18881, San Sebastian, Puerto Rico 00755 USA. (2/3).

WANTED: Cerambycidae from all over the world in exchange for specimens from Europe and the Soviet Union. Elvira Barchet, 6740 Clybourn Ave., #242, North Hollywood, CA 91606. Telephone (213) 761-3764.

FOR SALE OR EXCHANGE: Cocoons of A. luna, A. io lutheri, and C. promethea. SASE for prices. Will also accept desirable papered butterflies with data in exchange for cocoons. Larry J. Kopp, R. Box 30, Klingerstown, PA 17941.

FOR EXCHANGE: Will exchange many species of butterflies from Mayalasia, Philippines, Taiwan, some from Africa, Peru, Brasil, and Europe, all in A1 quality, for A1 specimens from other countries (USA, Canada, Central America, South America, Australia, Indonesia, India, etc.). Exchange

preferred, but can also buy. Please write to Patrick M. Malesieux, 87, rue Delhaye 59 148 Flines les Raches, FRANCE.

TO EXCHANGE OR PURCHASE: N.A., Neotropical Lepidoptera ova, pupae and cocoons. Offer in exchange fine exotic material. M. Zappalorti, Sr. 123 Androvette Street, Staten Island, NY 10309 USA.

WANTED: Worldwide Cicindelidae in trade for worldwide Lepidoptera. Willing to give several different or same species depending on type of Cicindelidae. All letters welcome. Contact: Ryan Bridge, 4329 Old Orchard Rd., York, PA 17402.

WANTED: Information on how to receive Atticus atlas formosanus ovae, larvae, or pupae. Contact: Ryan Bridge, 4329 Old Orchard Rd., York, PA 17402. (All letters answered.)

WANTED: Cicindelidae and Carabidae (Carabus, Cychrus, Scaphinotus, Calosoma, Anthinae only) species and literature. Worldwide beetles available of all families. Cesare Iacovone, Via G. Noventa #12, Scala I - int. 3, 00143 Roma, ITALY.

WANTED: Live larvae of any tiger beetles and live true katydids, both female and male. Will pick up anywhere and pay for the catch and phone call. Glenn Firebaugh, 3636 Hoiles, Toledo, Ohio 43612. (419) 478-8314.

WANTED: Correspondence to exchange information on common indoor spiders. Will identify specimens from the urban-suburban areas of your city (daddy-long-legs not included). Write to: Steven Gades, 1410 West Dunkerton Rd., Waterloo, IA 50703 USA.

FOR SALE: Large selection of papered Malaysia Butterflies, beetles, and other insects, all of A1 quality with data. Free catalog available from: DECO ENTERPRISE, P.O. Box 155, TAIPING, Malaysia.

HELP AVAILABLE: To Y.E.S. members, ages 17 and up, collecting in the vicinity of Oviedo, Florida, northeast of Orlando. Housing, microscope, and library available with

local Y.E.S. member. For more information, contact the Y.E.S. Trading Post.

WANTED: Ovae and pupae of Lepidoptera, especially Saturniidae, Papilionidae, and Nymphalidae. Willing to buy. Send lists and prices to: David Albaugh, 9 Columbia Avenue, Jamestown, RI 01835 USA.

WANTED: All books, new or used, pertaining to entomology, especially, Lepidoptera, Coleoptera, Orthoptera, and general entomology. Send lists and prices to: David Albaugh, 9 Columbia Avenue, Jamestown, RI 02835 USA.

FOR SALE: Insect Pins: Std. Black, Elephant, Stainless Steel, Minutens and Label Pins. Sizes 000 thru 7 available. For complete list write: Ianni Butterfly Enterprises, P.O. Box 81171, Cleveland, OH 44181.

FOR SALE: Worldwide collectible butterflies, beetles and rare insects, named with data. For subscription to butterfly and beetle price lists send \$5.00 to Ianni Butterfly Enterprises, P.O. Box 81171, Cleveland, OH 44181.

WANTED: Blow flies (Calliphoridae) on loan or for exchange from various regions of the U.S. (particularly the southwest), as part of a study of the distribution of these insects. All material sent will be identified and returned, except for a few specimens retained for the I.D. service. Blow flies are easily collected from raw fish or carrion baits. Send material to Donald Baumgartner, 150 S. Walnut St., Palatine, IL 60067.

FOR SALE: Neotropical insects from northern Central America, or will EXCHANGE same for Catocala (Lepidoptera: Noctuidae) especially from Europe, N. Africa, USSR, Central Asia, China or Korea. Also, SELL glassine envelopes in 3 convenient sizes; take fountain pen and stamp pad ink well. Eduardo C. Welling M., Apartado Postal 701, Merida, Yucatan, Mexico.

NEW SUMMER CATALOG, with up to 25% lower prices listed, now available. Specialists in Morpho (45 spp.), European butterflies (250 spp.), Parnassius (45 spp.) and general butterflies from around the world. Small orders welcome. Send \$1 cash/check or \$6 for a years monthly

catalogs/newsletters. State interests. Transworld Butterfly Company (YES), Apartado 6951, San Jose, COSTA RICA, C.A. (2/2)

FOR SALE OR TRADE: 100 Luna and 100 Cecropia cocoons. WANTED: Saturnid and spinxy livestock. Let me know what you have! R. Olmstead, P.O. Box 132, Byron, NY 14422 USA. (2/2)

FOR SALE: Worldwide Lepidoptera. Have a good selection of species from various parts of the Amazon region, South America, such as: Morpho, Papilio, Caligo, Agrias, Prepona, Heliconidae and many more. Top quality, papered with complete data. Good prices. Satisfaction guaranteed. Free price list sent on request. Thomas Greager, R.D. #6 Box 56-B, Greensburg, PA 15601 USA. (2/2)

EXCHANGE OR PURCHASE: Cicindelidae and Carabidae, worldwide. All letters answered. Gary A. Dunn, Dept. of Entomology, Michigan State University, East Lansing, MI 48824-1115 USA. (2/2)

